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Two New Hymenolepidid Cestodes, *Vampirolepis molani* sp. n. and *V. iraqensis* sp. n., from Iraqi Bats

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ABSTRACT—Two new hymenolepidid cestodes were found in bats collected at the various places in Iraq from October 1985 to November 1986. *Vampirolepis molani* sp. n. from *Pipistrellus kuhli* is related to but differs from *V. macrotesticulatus* Sawada, 1979, in the shapes of rostellar hooks and ovary. *V. iraqensis* sp. n. from *Taphazous nudiventris* is related to *V. taiwanensis* Sawada, 1984 and *V. hipposidera* (Lin, 1959) comb. n., but it differs from the former in the shapes of rostellar hooks, ovary and eggs, and from the latter in the length of rostellar hooks, the arrangement of testes and the shapes of ovary and eggs.

Cestode species parasitizing bats indigenous to Iraq have been entirely unknown up to the present. This study was conducted to clarify the cestode fauna of bats in Iraq.

MATERIALS AND METHODS

Total 123 bats, composed of two species, *Pipistrellus kuhli* (Natterer, 1819) and *Taphazous nudiventris* Cretzschmar, 1830, were collected from various parts in Iraq from October 1985 to November 1986, by the second author (Fig. 1).

The cestodes obtained from bats were fixed in 4% formalin and sent to the first author for identification. The cestodes removed out of formalin were washed in running water overnight. The morphological features of scoleces and eggs were examined without staining in this process. After being soaked in 45% acetic acid for about 5 hr for expanding, they were stored in 70% alcohol and then stained with alcohol-hydrochloride-carmine, dehydrated in alcohol, cleared in xylene, and mounted in Canada balsam. Measurements are given in millimeters.

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RESULTS

Bats examined and cestodes obtained are shown in Table 1.

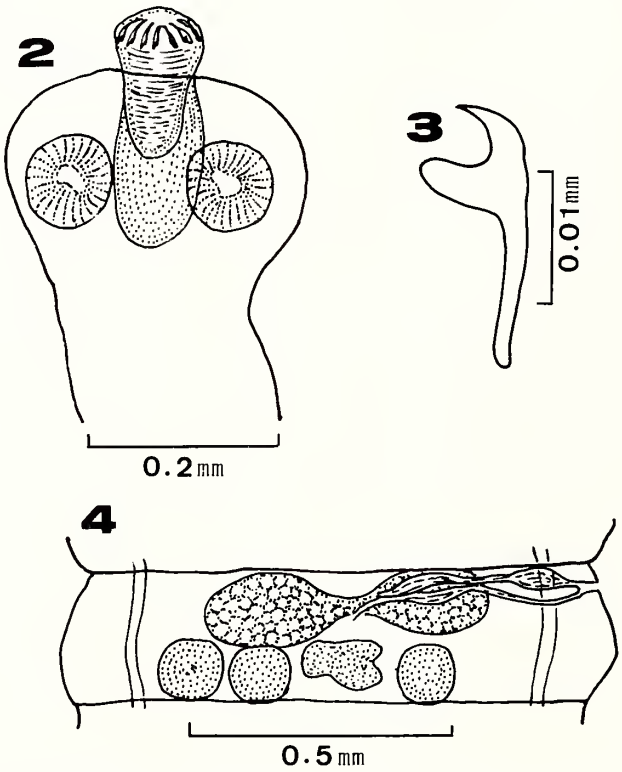
Vampirolepis Spassky, 1954
Vampirolepis molani sp. n.
(Figs. 2–4)

Of the 20 specimens of the bats, *P. kuhli*, caught

FIG. 1. Map showing the collection sites of bats. For locality numbers, see Table 1.

TABLE 1. Localities and dates of collection of bats and their cestode parasites in Iraq in 1985 and 1986

Host species Locality	Date	Number of bats			Cestode species
		examined	infected	%	
Vespertilionidae					
Pipistrellus kuhli					
(1) Arbil	Apr. 20, 1986	20	3	15	*Vampirolepis molani* sp. n.
(2) Kirkuk	Jul. 23, 1986	20	1	5	*V. molani*
(3) Sulaimaniah	Oct. 3, 1985	13	0	0	
(4) Diala	Oct. 4, 1985	12	0	0	
Emballonuridae					
Taphozous nudiventris					
(5) Babylon	Oct. 22, 1986	38	5	13	*V. iraqensis* sp. n.
(6) Basrah	Nov. 14, 1986	20	4	20	*V. iraqensis*



FIGS. 2–4. *Vampirolepis molani* sp. n. 2: Scolex. 3: Rostellar hook. 4: Mature proglottid, dorsal view.

at Arbil, on April 20, 1986, three were found infected with this cestode. All the cestode specimens obtained were fully mature but not gravid.

Description: Medium-sized hymenolepidid; worm length 58, maximum width 0.93. Scolex 0.189 in length and 0.259 in breadth across suckers, not sharply demarcated from strobila. Rostellum 0.133 long and 0.077 wide, armed with a single circle of 28 spanner-shaped hooks 0.021 long. Hook handle relatively long; guard strong,

round at its end, longer than blade, blade sharp at its end. Rostellar sac small, 0.217 long and 0.091 wide, extending to posterior edge of suckers. Suckers unarmed, round, 0.070–0.077 in diameter. Neck slender, 0.88 long and 0.21 wide. Numerous proglottids much broader than long.

Genital pores unilateral, located anterior 1/3 of proglottid margins. Testes three in number, round to oval, 0.098–0.105 by 0.119–0.126, arranged in a transverse row, one poral and two aporal, not in contact with longitudinal excretory canals laterally. Cirrus sac long and rather cylindrical, 0.154–0.161 long and 0.028 wide, occupied by internal seminal vesicle measuring 0.084–0.091 long and 0.028 wide. External seminal vesicle 0.119–0.040 by 0.028. Ovary transversely elongated, bilobate, 0.420–0.441 wide. Seminal receptacle dorsal to ovary, measuring 0.182–0.210 long and 0.025–0.035 wide. Vitelline gland lying just posterior to ovary, irregularly lobate, 0.126–0.133 by 0.077–0.091. Gravid and senile proglottids unknown.

Host: *Pipistrellus kuhli* (Natterer, 1819).

Site of infection: Small intestine.

Locality and date: Arbil, Iraq: April 20, 1986.

Type specimen: Holotype: NSU Lab. Coll. No. 8801. Paratypes: No. 8802.

Remarks: The present new species closely resembles *V. macrotesticulatus* Sawada, 1970 [1] from *Rhinolophus ferrumequinum nippon* in the number and length of rostellar hooks. However, it differs from *V. macrotesticulatus* in the shape of rostellar hooks (guard strong and blade remarkably curved vs. guard slim and blade gently curved) and the shape of ovary (distinctly bilobate vs. irregularly bilobate).

Vampirolepis iraqensis sp. n.
(Figs. 5–8)

Of the 38 specimens of *T. nudiventris*, collected at Babylon, Iraq, on October 22, 1986, five were found infected with this cestode.

Description: Small-sized hymenolepidid; mature worms 30–50 in length; maximum width 0.9. Metamerism distinct, craspedote, margins serrate. Proglottids wider than long. Scolex 0.280 long and 0.245–0.294 wide, distinctly set off from neck region measuring 0.6 long and 0.12 wide. Rostellum 0.063 long and 0.049 wide, armed with a single row of 24 spanner-shaped hooks measuring 0.018 long. Hook handle slender; guard round at its end, slightly shorter than blade; blade remarkably curved, sharp at its end. Rostellar sac pyriform, 0.147 long and 0.098 wide, not extending posterior to suckers. Suckers unarmed discoid, 0.077 in diameter.

Genital pores unilateral, located slightly posterior to middle of each proglottid margin. Testes three in number, round to subspherical, 0.049–0.060 by 0.053–0.056, arranged in form of triangle, one poral and two aporal. Cirrus sac, well developed, pyriform, 0.084–0.095 long and 0.028–0.035 wide. Internal seminal vesicle 0.060–0.063 long and 0.028–0.035 wide, occupying almost whole of cirrus sac. External seminal vesicle 0.042–0.049 long and 0.035–0.045 wide. Ovary distinctly trilobate, 0.105–0.112 wide. Vitelline gland irregularly lobate, lying just posterior to ovary, 0.049–0.060 by 0.039–0.042. Seminal receptacle saccated, 0.050–0.053 long and 0.042–0.053 wide, overlapping ovary. Uterus arising directly from ovarian lobes as a lobe sac, which is gradually enlarging, fulling whole available space in proglottids. Eggs oval, 0.049–0.056 in major axis and 0.035–0.039 in minor axis, surrounded by four thin envelopes. Outermost chorion thin; inner membrane with at each pole a round projection provided with polar filaments. Onchospheres subspherical, 0.021–0.025 by 0.025–0.028; embryonic hooks 0.018 long.

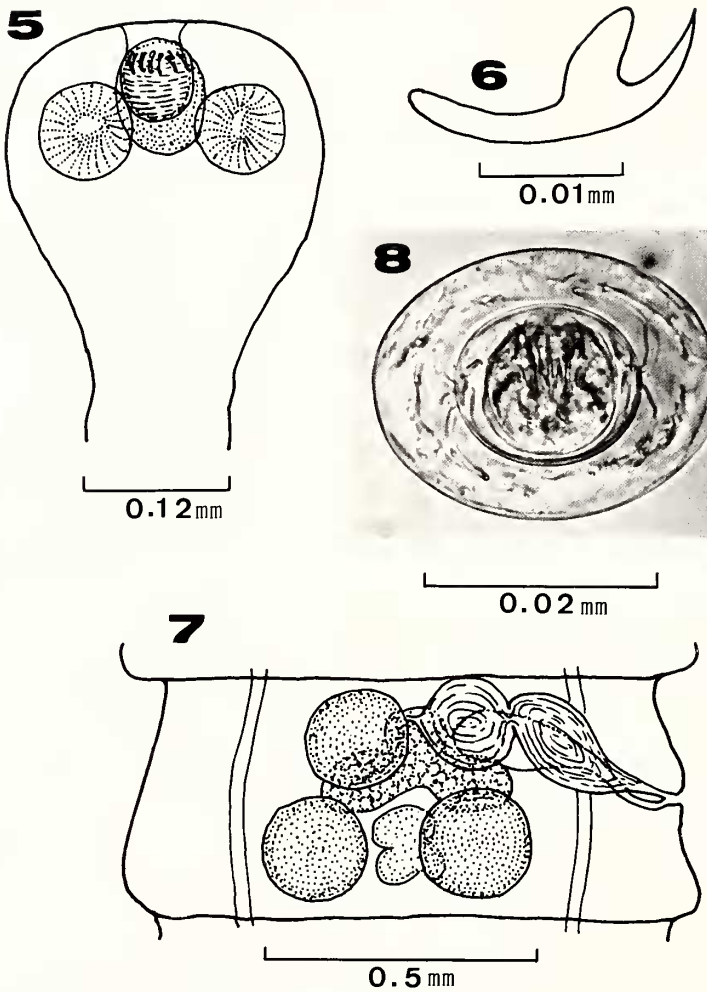
Host: *Taphazous nudiventris* Cretzschmer, 1830.

Site of infection: Small intestine.

Locality and date: Babylon, Iraq: Oct. 22. 1986.

Type specimen: Holotype: NSU Lab. Coll. No. 8803. Paratypes: 8804.

Remarks: *Vampirolepis iraqensis* sp. n. most closely resembles *V. taiwanensis* Sawada, 1984 [2] in the number and length of rostellar hooks, the location of genital pores and the arrangement of testes, and *V. hipposidera* (Lin, 1959) comb. n. [3, 4] in the shape of scolex, the number of rostellar hooks and the location of genital pores. However, this new species is distinguished from *V.*



FIGS. 5–8. *Vampirolepis iraqensis* sp. n. 5: Scolex. 6: Rostellar hook. 7: Mature proglottid, dorsal view. 8: Egg.

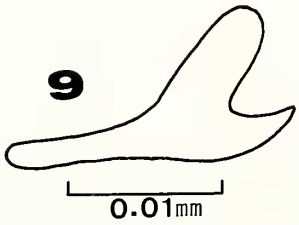


FIG. 9. Rostellar hook of *V. taiwanensis*.

taiwanensis by the shape of the rostellar hooks. The blade is longer than the guard, and the guard is slimmer (Figs. 6 and 9). The species can be separated also from *V. hipposidera* in the shorter rostellar hooks (0.018 vs. 0.021–0.024) and the arrangement of testes (in a triangular form vs. in a transverse row). Furthermore, it differs from the two others in the shape of ovary (trilobate vs. transversely elongated), the thinner outermost chorion of eggs (thin vs. tough) and in the morphological feature of eggs (provided with polar filament vs. no polar filament).

REFERENCES

1 Sawada, I. (1970) Helminth fauna of bats in Japan VII. Bull. Nara Univ. Educ., **19**: 73–80.

2 Sawada, I. (1984) Two new species of cestodes belonging to the genus *Vampirolepis* (Cyclophylidea:

Hymenolepididae) from cave bats in Taiwan. Zool. Sci., **1**: 327–331.

3 Lin Yu-Kwang (1959) Notes on a new cestode, *Hymenolepis hipposidera*, from the bat *Hipposideros pratii* Thomas, in Fukien, South China. J. Fukien Teacher's Coll., **2**: 185–193. (In Chinese with English summary)

4 Sawada, I. (1980) Helminth fauna of bats in Japan XXII. Annot. Zool. Japon., **53**: 194–201.